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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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EXAMINER

WALSH, BRIAN D

ART UNIT

PAPER NUMBER

3722

DATE MAILED: 05/06/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

66

Office Action Summary

Application No.

10/006,713

Applicant(s)

LUNDBLAD, MIKAEL

Examiner

Brian Walsh

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 December 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-32 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-32 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 December 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5,6.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 1 – 12, 14, 16, 18 – 29 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Huang et al. in view of Redmond et al.

Regarding claims 1, 16 and 18, Huang et al. discloses an apparatus and method for controlling vibrations during a machining operation. Huang et al. discloses a sensor to detect vibrations of a workpiece during machining and a control device to identify, compare and produce an error signal (compensating signal) to the vibration detected to be used by damping mechanism in order to minimize or eliminate the vibration (Col. 3, lines 24 – 26, 29 – 33 and 53 – 65).

However, Huang et al. fails to disclose that the sensor and damping force generator are located on the machine tool, rather on the workpiece support structure.

Redmond et al. discloses a nearly identical structure and method with a mere reversal of parts wherein the sensing and damping equipment are located on the machine tool itself.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the vibration damping apparatus and method of Huang et al. to reverse the location of the sensing and damping equipment such that they are located on the

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cutting tool itself since Huang et al. discloses the placement of these elements on the tool can be used to dampen vibrations while not interfering with cutting operations or cooling (Abstract, lines 6 – 8).

Regarding claims 2 – 10 and 19 – 27, Huang et al. and Redmond et al. disclose all of the elements as set forth above. Huang et al. further discloses response parameters define the amplitude, phase and frequency of movement for each of the force generators (Col. 9, lines 44 – 49). However, Huang et al. fails to disclose the exact directions (or phase shifts) in which the response parameters operate.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to accommodate for any phase shift or damping force frequency generation since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

Regarding claims 11, 12, 14, 28, 29 and 31, Huang et al. discloses all of the elements as set forth above, however, Huang et al. fails to disclose force generators (actuators) for creating the damping force include piezoelectric, hydraulic or magnetostrictive devices.

Redmond et al. discloses all of these types of actuators for creating a damping force in the shank of a machine tool in order to offset a detected vibration (Col. 3, lines 9 – 12).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the force generators of Huang et al. to be comprised of piezoelectric, hydraulic or magnetostrictive devices as taught by Redmond et al. since Redmond

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et al. teaches the use of these actuators to dampen vibrations in a cutting tool since they can be mounted in a recess of the tool structure (Col. 3, lines 9 – 10).

2. Claims 13 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Huang et al. in view of Redmond et al. and in further view of Streicher.

Huang et al. and Redmond et al. disclose all of the elements as set forth in the above rejections, however, though they do list a number of damping elements to offset a detected vibration in a machine tool, they fail to explicitly disclose that along with hydraulic, piezoelectric and electromagnetic elements, a pneumatic damping element may be used.

Streicher discloses an apparatus similar to the instant invention which utilizes a number of elements to dampen a vibration in a machining tool. Streicher explicitly discloses an apparatus and method include using a pneumatic damping element (along with the electrical, hydraulic or mechanical damping elements) to counteract tool vibration during a cutting operation.

3. Claims 15, 17 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Huang et al. in view of Redmond et al. and in further view of Mubaslat.

Huang et al. and Redmond et al. disclose all of the elements as set forth in the above rejections, however, they fail to disclose an amplitude of the damping device is gradually decreasing.

Mubaslat discloses a cutting tool that experiences vibrations during operation and wherein a damping device is operable to counteract this vibration. The “pulses” (50) eliminate vibration and decrease to a zero amplitude (Col. 5, lines 52 – 57).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the damping effect of Huang et al. and Redmond et al. to decrease in amplitude since Mubaslat teaches a control system for a cutting machine that controls the phases of the pulses with respect to oscillation as well as the widths and amplitudes of the damping device in order to rapidly reduce vibration (Col. 5, lines 48 – 56).

Conclusion

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Etling et al. and Browning et al. discloses vibration damping systems similar the instant invention.

Faxing of Responses to Office Actions

5. In order to reduce pendency and avoid potential delays, TC 3700 is encouraging FAXing of responses to Office Actions directly into the Group at (703) 872-9302. This practice may be used for filing papers not requiring a fee. It may also be used for filing papers which require a fee by applicants who authorize charges to a PTO deposit account. Please identify the examiner and art unit at the top of your cover sheet. Papers submitted via FAX into TC 3700 will be promptly forwarded to the Examiner.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian Walsh whose telephone number is (703) 605-0638. The examiner can normally be reached on Monday - Friday 7:30 A.M. to 4:00 P.M..


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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrea Wellington can be reached on (703) 308-2159. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9302 for regular communications and (703) 872-9303 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1148.



BDW
April 30, 2003



A. L. WELLINGTON
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